DOCKET NO: 287117US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
KATSUMI YABUSAKI	: EXAMINER: ISSAC, R. P.
SERIAL NO: 10/576,468	:
FILED: APRIL 20, 2006	: GROUP ART UNIT: 1623
FOR: CELLULOSE II PHOSPHATE ESTER AND METAL-ADSORBING MATERIAL USING THE SAME	:

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Final Rejection dated October 23, 2007 of Claims 1-18. A Notice of Appeal, along with a one-month extension of time, was timely filed on February 25, 2008.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Kowa Co., Ltd., having an address at 6-29, Nishiki 3-chome, Naka-ku, Nagoya-shi, Aichi, Japan 460-8625.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 1-18 stand rejected and are herein appealed.

IV. STATUS OF THE AMENDMENTS

An amendment under 37 CFR 1.116 was filed on January 16, 2008. In an Advisory Action entered February 14, 2008, the Examiner indicated that the amendment would be entered, and that the amendment overcame, in effect, all the rejections under 35 U.S.C. § 112. In the Advisory Action, the Examiner also states that Applicant's arguments regarding "statements of admissions" are found "persuasive."

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

A summary of the claimed subject matter, as claimed in sole independent Claim 1, is mapped out below, with reference to page and line numbers in the specification added in **[bold]** after each element.

The claimed subject matter is a cellulose II phosphate, which cellulose II phosphate may be partly carbamidated, **[paragraph bridging pages 6 and 7]** wherein said cellulose II phosphate has a degree of phosphorylation of from 3 to 20 wt%. **[page 13, lines 5-6]**

VI. GROUNDS OF REJECTION

Ground (A)

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over US 6,579,977 (Pieschel et al) in view of US 4,981,515 (Hiraoka et al), and further view of Applicant's admissions.[1]

Ground (B)

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over CA 868344 (Clermont et al) in view of Pieschel et al, and further view of Applicant's admissions.[2]

VII. ARGUMENT

Ground (A)

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over US 6,579,977 (Pieschel et al) in view of US 4,981,515 (Hiraoka et al), and further view of Applicant's admissions. That rejection is untenable and should not be sustained.

Pieschel et al, which is from the same patent family as WO 99/28372, as can be confirmed by the cover page thereof, is described in the specification herein as Patent Document 2 [0008], and as describing a method for enhancing the mechanical strength of fibers by using sulfur powder upon production of cellulose phosphate [0007]. Particularly, Pieschel et al discloses a process for producing biosorbents by phosphorylation of cellulose-containing materials with phosphoric acid or ammonium phosphate in the presence of urea (column 1, lines 9-12). However, as recognized by the Examiner, Pieschel et al does not disclose the use of cellulose II as the source of their cellulose. Indeed, as Applicant discloses

[1] In view of the above-discussed statement by the Examiner in the Advisory Action about "admissions," it is believed that the Examiner no longer relies on such admissions as part of the rejection. However, since the Advisory Action also states that "[t]he rejection under section 103(a) is maintained for the reasons of record," the Examiner's statement of the ground of rejection has been maintained.
[2] See n.1.

in the specification at [0008], cellulose exists in four polymorphs ranging from polymorph I, which is a natural cellulose, to polymorph IV. Cellulose I phosphate is available from the phosphorylation of natural cellulose, such as disclosed in Pieschel et al, but the phosphorylation product of cellulose II is not known.

Hiraoka et al discloses a regenerated cellulose composition having a high functionality, containing active carbon (column 1, lines 7-11). Hiraoka et al acknowledges that such compositions are adsorptive but Hiraoka et al is concerned also with flammability, and discloses that it is attempted to add active carbon and a phosphorus flame retarder to a viscose in a usual manner and then to regenerate cellulose, but the resulting regenerated cellulose composition, even though it has excellent flame retardance, has low adsorptivity due to incorporation of the flame retarder even if subjected to a high vacuum treatment (column 1, lines 27-46). Hiraoka et al's invention is drawn to a process of producing a composition containing these components while maintaining the desired adsorption activity (paragraph bridging columns 1 and 2).

Without the present disclosure as a guide, one skilled in the art would not have combined Pieschel et al and Hiraoka et al. Indeed, there was no reasonable forseeability as to what the result would be by replacing the cellulose I of Pieschel et al with the regenerated cellulose of Hiraoka et al. Nor does either reference disclose or suggest the presently-recited limitation of degree of phosphorylation. Nor could either reference have predicted the improvement in adsorption capability by using cellulose II phosphate in place of cellulose I phosphate, as shown in Example 1 herein, and the data in Tables 1-3, in the specification at [0030]-[0035]. Similar results by comparing cellulose I phosphate to cellulose II phosphate are also shown in Examples 2-6, described in the specification beginning at [0036]. Indeed, in view of the lack of any disclosure or suggestion in the prior art that cellulose II is superior

to cellulose I with regard to adsorption capability, the improved results herein are necessarily unexpectedly better.

In response to the above arguments, the Examiner finds that since there is only a limited number of well recognized polymorphs of cellulose, i.e., cellulose I-IV, and as cellulose II is among the most widely used polymorphs of cellulose, one skilled in the art would have used cellulose II in place of cellulose I "to achieve beneficial effects arriving at the instant invention. Such changes are considered within the routine skills of one of ordinary skill in the art, and amounts to nothing more than optimization of the invention disclosed in Pieschel's by changing one ingredient for another well known ingredient. Thus, the claim would have been obvious because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art...."

In reply, the missing element in the Examiner's response is an absence of any recognition in the art of any expected equivalence or interchangeability of cellulose I and cellulose II when phosphated, and well as any equivalence or interchangeability of the phosphates in terms of their respective absorption capability. The fact that there may be a limited number of polymorphs of cellulose is irrelevant because without the present disclosure as a guide, there would have been no reason to replace cellulose I with cellulose II.

It is also noted that the Examiner has made no findings with regard to the above-discussed comparative data, nor has the Examiner made any finding with regard to the limitation in the claims of degree of phosphorylation.

Finally, to the extent the Examiner may still be relying on Applicant's admissions that there is no criticality with regard to the amount of carbamidation, as an admission of prior art herein, Applicant's statement of no criticality is part of Applicant's discovery (which is the same as stating that any amount of carbamidation is equivalent to any other amount thereof) and is not an admission of prior art. Compare *In re Ruff*, 256 F.2d 590, 118 USPQ 340, 347

(CCPA 1958) ("To rely on an equivalence *known only to the applicant* to establish obviousness is to assume that his disclosure is a part of the prior art. The mere statement of this proposition reveals its fallaciousness.")

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (B)

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over CA 868344 (Clermont et al) in view of Pieschel et al, and further view of Applicant's admissions. That rejection is untenable and should not be sustained.

Clermont et al is directed to a process of introducing phosphorus into cellulose material which contains some free hydroxyl groups particularly cellulose derivatives (page 1, lines 1-3). Clermont et al discloses further that the "higher phosphorus content products have useful ion-exchange properties" (page 3, lines 4-5). However, Clermont et al discloses nothing with regard to adsorption of metal ions, nor does Clermont et al disclose or suggest the presently-recited phosphorylation degree.

The disclosures and deficiencies of Pieschel et al have been discussed above. Pieschel et al does not remedy the deficiencies in Clermont et al. Thus, analogous to the discussion above with regard to the rejection over Pieschel et al in view of Hiraoka et al, there was no reasonable forseeability of the metal adsorption properties obtainable by replacing the cellulose I of Pieschel et al with, for example, the mercerized or aged alkali cellulose of Clermont et al. In addition, the above-discussed comparative data in the specification is also relevant to the present rejection. Thus, one skilled in the art could not have predicted these results based on the combination of Clermont et al and Pieschel et al.

In response to the above arguments, the Examiner finds that metal ion adsorption is an ion-exchange process in which the phosphorous groups bind to metal ions which was well recognized by Clermont et al, and Pieschel et al also discloses the use of phosphorylated cellulose for metal adsorption. The Examiner then cites various case precedent for the proposition that one cannot show unobviousness by attacking references individually where the rejections are based on combinations of references.

In reply, even if one skilled in the art would find it *prima facie* obvious to use Clermont et al's materials for adsorbing metal ions, Applicants have not argued Clermont et al and Pieschel et al individually, but traversed the rejection as made. As discussed above with regard to the prior art rejection under Ground (A), the Examiner has not responded at all to the above-discussed comparative data or the fact that neither reference discloses the presently-recited limitation of degree of phosphorylation.

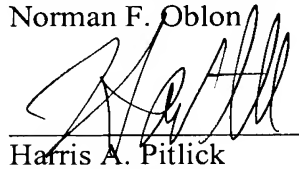
For all the above reasons, it is respectfully requested that this rejection be REVERSED.

VIII. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Final Rejection be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Harris A. Pitlick
Registration No. 38,779

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)

NFO:HAP\

CLAIMS APPENDIX

Claim 1: A cellulose II phosphate, which cellulose II phosphate may be partly carbamidated, wherein said cellulose II phosphate has a degree of phosphorylation of from 3 to 20 wt%.

Claim 2: A process for producing the cellulose II phosphate according to claim 1, which comprises reacting a phosphorus oxide, a phosphoric acid halide, or a phosphoric acid or a salt thereof with cellulose II which may be partially carbamidated.

Claim 3: A method of adsorbing metal ions in a solution, comprising adsorbing said metal ions using said cellulose II phosphate according to claim 1 as a metal-adsorbing material.

Claim 4: A metal-adsorbing system comprising the cellulose II phosphate according to claim 1.

Claim 5: A metal-adsorbing system according to claim 4, wherein said metal-adsorbing material is packed in a column.

Claim 6: A metal-adsorbing system according to claim 4, wherein said metal-adsorbing material is in a form of a bag.

Claim 7: A metal-adsorbing system according to claim 4, wherein said metal-adsorbing material is in a form of a cylinder or fabric and is arranged inside a water storage tank.

Claim 8: An anion-adsorbing material comprising a metal salt of the cellulose II phosphate according to claim 1.

Claim 9: A cellulose II phosphate according to claim 1, which has a degree of phosphorylation of from 8 to 20 wt%.

Claim 10: A cellulose II phosphate according to claim 1, which has a degree of carbamidation of from 0 to 6.8 wt% in terms of nitrogen content.

Claim 11: A process according to claim 2, wherein the cellulose II phosphate has a degree of phosphorylation of from 8 to 20 wt%.

Claim 12: A process according to claim 2, wherein the cellulose II phosphate has a degree of carbamidation of from 0 to 6.8 wt% in terms of nitrogen content.

Claim 13: A method according to claim 3, wherein the cellulose II phosphate has a degree of phosphorylation of from 8 to 20 wt%.

Claim 14: A method according to claim 3, wherein the cellulose II phosphate has a degree of carbamidation of from 0 to 6.8 wt% in terms of nitrogen content.

Claim 15: A metal-adsorbing system according to claim 4, wherein the cellulose II phosphate has a degree of phosphorylation of from 8 to 20 wt%.

Claim 16: A metal-adsorbing system according to claim 4, wherein the cellulose II phosphate has a degree of carbamidation of from 0 to 6.8 wt% in terms of nitrogen content.

Claim 17: An anion-adsorbing material according to claim 8, wherein the cellulose II phosphate has a degree of phosphorylation of from 8 to 20 wt%.

Claim 18: An anion-adsorbing material according to claim 8, wherein the cellulose II phosphate has a degree of carbamidation of from 0 to 6.8 wt% in terms of nitrogen content.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.